COMPLETED
38

ED 1.310/2:263115

DOCUMENT RESUME

ED 263 115 TM 850 005

AUTHOR Ender, Philip B.
TITLE Distributive Processing Issues in Education Information Systems.
INSTITUTION California Univ., Los Angeles. Center for the Study of Evaluation.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
PUB DATE Nov 84
GRANT NIE-G-84-0112-P1
NOTE 38p.; In: Comprehensive Information Systems for Local School Improvement: A Reality-Test in Secondary Schools (TM 850 001). Marginally legible due to faint print.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Computer Managed Instruction; *Data Processing; *Evaluation Methods; Evaluation Utilization; Feasibility Studies; High Schools; *Information Systems; Instructional Improvement; *Microcomputers; School Counseling; School Districts; Student Records; *Systems Approach
IDENTIFIERS California; Computer Networks; Distributed Data Processing Systems; *Systemic Evaluation

ABSTRACT

This is one of a series of reports based on an ongoing reality test of systemic evaluation for instructional decision making. This feasibility study is being carried out by the Center for the Study of Evaluation with the Laboratory in School and Community Relations at a suburban Los Angeles high school (called Site A). Viewing a school as a cultural/ecological system, systemic evaluation is a set of principles to guide local development of processes to gather, organize, and utilize information relevant to the needs and values of the system and its members. This paper examines the issues and problems involved in implementing school and teacher access to data in the district computerized information system. It proposes a distributed (decentralized) data processing approach utilizing microcomputer systems throughout the district combined with off-line processing and/or query systems. Distributive processing concerns include: data file size, backing-up data, file compatibility, data formats, programming language compatibility, multiple files, archival files, communications systems, graphic displays, multiplicity of databases, and data codebooks. Appendices contain a description of the district's current data processing services, and lists of standard and non-standard reports generated. (BS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BEST COPY AVAILABLE

ED 1.310/2:263115

AUG 21 1986

BEST COPY AVAILABLE

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

G. Gray

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ED263115

DISTRIBUTIVE PROCESSING ISSUES IN EDUCATION INFORMATION SYSTEMS

Philip B. Ender

ORIGINAL

This report is concerned selected issues and problems in establishing and operating computerized information systems in local educational systems. Schools and districts generate and store tremendous amounts of information. Some of this information is strictly administrative: personnel records, inventories, purchase orders, etc. while other information has implications at the instructional level: test scores, grades, absences, etc. The utilization of information occurs at multiple levels: teacher, counselor, principals, district administration, superintendents, and school boards (Burstein, 1984; Durant & Cooley, 1984). Until recently, the management of information has been centralized at the district level (with the exception of manual filing systems at the classroom and school level). Schools and districts have been slow to take advantage of the advances in information management that have taken place in the last decade (Hathaway, 1984).

One common complaint, at the school level, is that the district data processing center is not responsive to the school's need for information. Either, it takes too long to get reports from the district or the district does not provide data necessary to make appropriate educational

BEST COPY AVAILABLE

decisions at the school, class, or student level. One solution is to allow the users of the information, using remote terminals or microcomputers, located in the schools, to generate reports and analyze data in a manner most useful to their own needs.

One area in which information has been available at the school and teacher level is Computer Managed Instruction (CMI), in which items or tests are selected from a test bank and progress reports of student status are generated. This is one area in which there seems to be some cooperation between district level data processing and the needs of educational decision makers (Dussault, 1984; Idstein & Schmalz, 1983).

The perspective of this report is based on experiences gained in working with a high school in a suburb of Los Angeles. For the purposes of this report, the high school will be referred to as Site A while the district will be referred to as the Valley Unified School District. This predominantly middle and lower SES district has data and information problems similar to many other school districts nationwide. Valley Unified has a centralized data processing center, whose administrators are open to advances which will improve information utilization in the district. Appendices I through V describe the Valley Unified computer system and management information system in more detail.

BEST COPY AVAILABLE

The purpose of this report is to discuss the issues and to examine the problems that can arise in trying to implement school and teacher level access to data and use of information. This report highlights two basic approaches to information processing:

1. Centralized data processing -- With this approach a district uses one mainframe computer system with on-line remote terminals in various locations throughout the district. All queries, reports, and analyses are processed on this one computer system.
2. Distributed (decentralized) data processing -- This approach makes use of multiple computer systems, usually one central mainframe computer system and a number of microcomputer systems located throughout the district. These microcomputer systems can be used as remote terminals to the district mainframe or they can be used as stand alone computer systems, analyzing data independently of the district's mainframe. (see Table 1)

MAINFRAMES vs MICROCOMPUTERS

Mainframe computer systems and microcomputers function in basically the same manner, they differ in size, capacity, and speed of processing. Mainframe computers often fill large rooms and have their own air conditioning and electrical systems. Mainframes require trained operators

BEST COPY AVAILABLE

and programmers. They are very expensive to purchase and operate but are cost effective because they can process large amounts of data very quickly.

Microcomputers, on the other hand, are small desktop sized computers that are relatively (compared to mainframe computers) inexpensive to own and operate. At issue is whether microcomputers as part of a decentralized data processing system can play a useful role in school and teacher level access to information.

While this section is labeled "Mainframes vs Microcomputer", it is not an either-or issue. For all but very small school districts, central mainframe computers will be an important element of both centralized and distributed processing systems. In distributed systems the processing is done by remote microcomputers but the master data files are still stored on the central mainframe computer.

DISTRICT vs SCHOOL ISSUES

Every school district office performs a large amount of data processing to meet its own needs. The kinds of data analyses are primarily accounting in nature, since much of the information will go to either the state or the federal government or is used in making funding decisions internal to the district.

BEST COPY AVAILABLE

Schools indicate that they have a need for information that can be used to help make instructional decisions. The kinds of data and types of reports needed by schools may be somewhat different than those used by the district administration.

Much of the information collected and stored at the district level (test scores, etc.) could be of use to educational decision makers if it were either reported in a different manner or aggregated at a different level, say the classroom or school level (Burstein, 1984).

The idea is, that once the data is accessable to the schools, that teachers and/or administrators will be able to sit down at the terminal or microcomputer and ask questions about various aspects of student performance, behaviors, and attitudes. In the final analysis, the user (teacher, counselor, or administrator) doesn't care whether the computer system is an on-line centralized system or an off-line distributed system. The user only wants to be able to get information quickly and easily.

QUERY SYSTEMS: GETTING THE INFORMATION

Software (programs) that allows users to ask questions about information contained within the computer are known generically as query systems. Query systems allow one to pose questions such questions as "which students have GPA's greater than 3.0 and reading percentiles above 95?" or

BEST COPY AVAILABLE

"which students work more than 10 hours per week, listed alphabetically by teacher."

On-line query systems are expensive either to purchase or to develope from scratch. Many on-line query systems are very difficult to use, requiring practically programmer level skills to operate. Others may be relatively easy to use having a high degree of "user friendlyness". On-line query systems take up a lot of computing resources. One implication of this is that response time to questions can become very slow, taking up to half a minute or more. Further, the computer center cannot run as many other programs at the same time when an on-line query systems is running.

One very serious concern with on-line query systems centers around reliability of the system. With an on-line system when the mainframe computer malfunctions all the users, on their remote terminals, cease to operate. A small malfunction at the district computer center can interfere the work of literally hundreds of users. When processing is distributed, malfunctions on one microcomputer do not interfere with the work taking place on other microcomputers. The microcomputer-based (decentralized) systems can also operate independently of the district mainframe computer.

Query systems for microcomputers are neither very common nor very easy to use. They require a lot of

BEST COPY AVAILABLE

computing power from the micro and sophisticated users (Idstein & Athey, 1984). Microcomputer query systems are comparable in difficulty (but not in processing power) to current on-line systems that have been implemented by some districts.

A major difference between on-line query systems and microcomputer based systems is one of cost. On-line query systems are much more expensive to develope or purchase (in the tens of thousands of dollars) than microcomputer based systems (in the hundreds of dollars). Costs aside, the microcomputer solution is often more attractive to users because it frees them from dependence on the district computing center.

At the same time, because of the power inherent in the district's mainframe, it is often easier to generate common reports for administrators and teachers on the district mainframe computer than to accomplish this on a query system. This holds true regardless of whether an on-line or an off-line query has been implemented. The district already has much of the information in their files and a staff of programmers that can develop these reports quickly and efficiently.

Having suggested distributed off-line processing and/or query systems as one possible solution to getting information into the hands of teachers, counselors, and

BEST COPY AVAILABLE

school administrators the remainder of this report examines the implications, problems, and issues involved in distributive processing.

DISTRIBUTED PROCESSING CONCERNS

File Size Issues

In order for distributive processing on microcomputers to occur, data has to be transferred from files and databases on the mainframe computer to the microcomputer. One concern in transferring data from district mainframe computers to school microcomputers involves the issue of the computer's memory capacity. Although microcomputers and mainframes work using the same basic principles, the mainframes usually have a much greater capacity in terms of internal RAM (Random Access Memory) memory and external disk memory. It is therefore necessary to break large files and databases into smaller chunks for processing on the microcomputers.

The breaking of files into smaller chunks is most easily accomplished by the mainframe itself. Files could be extracted for a particular grade level within one school or even down to the classroom level if necessary.

Today's microcomputers have internal memories ranging from 64K (64,000) bytes to just over half a megabyte. There is every indication that the trend is toward larger internal

BEST COPY AVAILABLE

memories (Mainframe computers have much larger memories, measured in millions of bytes). The larger the internal memory of the microcomputer the more sophisticated programs it can run. Although not always true, one can generally count on the fact that larger programs will be easier to use and will run faster.

External disk memory is an important factor in the size of data files that can be used by the microcomputer. The larger the disk memory capacity the larger the data file that can be processed.

External disk memories for microcomputers can be of two types: Floppy disks or hard disk. Floppy disks have capacities of 140K to one megabyte. Again the trend is towards larger capacity floppy disks. Floppy disks have the advantage that with dual floppies, it is quite easy to make backup copies of important data on a regular basis. The main drawback is that floppy disk capacity is too small for many useful data storage needs.

The hard disk have much larger capacity than floppy disks. Hard disks typically run from 10M (10,000,000) bytes to 40M, 60M, and even 100M. These kinds of capacities are certainly sufficient for school level databases and files. The drawbacks to hard disks are their prices, expensive ($2,500 to $15,000); and the difficulty in backing up such large amounts of data on a regular basis.

BEST COPY AVAILABLE

Backing-Up Data

It should be remembered that mainframe computers maintain a staff of programmers and operators, one of whose important tasks is to make regular backups of the data files. District computer centers do this on a daily basis. Every data file that is used during the course of the day is copied, usually onto magnetic tape, and saved. If anything should happed to the original file then the backup can be used to replace it.

Data files can be lost in a number of ways. They can be accidently erased, there can be a hardware failure in the disk system, or a power failure can occur while a data file is being used. These kinds of occurances are not that uncommon. It is very important to have backups of data files.

Off-line processing using microcomputers with floppy or hard disks need to develop policy concerning the backup of important files and programs.

Compatibility Issues

Attempts to develop distributed processing systems can run into several problems concerning compatibility of data files. Off-line processing implies that data files or sub-sets of data files be transferred from the district mainframe computer to local microcomputers in schools. If

BEST COPY AVAILABLE

there are compatibility problems then these file transfers cannot take place.

Data Formats

Mainframes and microcomputers can have character formats which are incompatible with one another. Microcomputers typically use ASCII (American Standards Code for Information Interchange) representation for the printable characters and numbers. Many mainframes also use ASCII, but some may use other conventions, such as EBCDIC (Extended Binary Coded Decimal Interchange Code), found on many IBM mainframes. The software which transfer data files from the mainframe computer to the microcomputer must be able to translate from one representation to another.

Even when two computers can transfer data, it is not necessarily the case that the files transfered from the mainframe to the microcomputer can be read and used by the microcomputer. Files themselves have certain structures. Files from a mainframe computer may have a structure that is incompatible with file structures allowed on the microcomputer.

The ways in which numbers are stored can be very different between different types of computers. Some computer systems store numbers as packed decimals (in which every two digits of a number are represented in one byte) while others may store numbers as any one of a dozen

BEST COPY AVAILABLE

different binary representations. Unless the numbers can be converted for one data representation to another, files cannot be effectively transferred from mainframe to microcomputer.

Language Compatibility

Whether we are talking about insurance companies or school districts, COBOL is the predominant data processing language. COBOL has built into it a number of features that make the use and updating of large files easy and practical. The major problem that occurs when one tries to use files created by COBOL with other, non-COBOL, programs is that the files are not necessarily compatibile. That is, it is possible for a COBOL program to create files that only a specific COBOL program can access. Although it is possible to use COBOL on some microcomputers, it is not necessarily compatible with the COBOL that is found on mainframe computers.

Typical data files for major statistical packages, such as SPSS, SAS, and BMDP make use of sequential text files. Sequential text files store information contiguously in one area on the disk. For example, to obtain information on the twenty-fifth student in a file, you would have to read through all the information on the first twenty-four students. Many microcomputer statistical programs and

BEST COPY AVAILABLE

database systems also make use of sequential files, although equally many use their own unique structures.

COBOL files, on the other hand, maintain unique structures that can involve the use of random access files. That is COBOL allows for the use of pointers that can go from one location in a file to another location without having to read all the information in between.

To use the COBOL files with an off-line distributive processing system requires a program that can read the COBOL files and translate them into sequential text files. This is most easily accomplished if the district's mainframe could merge the necessary files and generate the appropriate sequential text file.

Multiple Files

Not only does COBOL allow for the use of pointers within a file but it also allows for the simultaneous use of multiple files. District data processing systems working in COBOL typically split their databases up into many subfiles. Thus, in COBOL based systems, it is typical for information needed in a single report to be found in many different files. For instance, there can be a Student Master File, an Attendance File, a Class Roster File, and so on.

Distributive processing systems may not allow for more than one or two files to be in use at one time. When working with off-line microcomputer-based systems, it may

BEST COPY AVAILABLE

become necessary to merge the required files together into a single file.

There are some microcomputer programs that allow the use of multiple files. Dbase II (and the brand new Dbase III) is a microcomputer database management program which allows several related files open at one time. In this respect it is similar to COBOL; however, the Dbase files themselves directly are not compatible with COBOL files. Another, very popular database system, DB Master makes use of its own structure.

Although it is more efficient during normal data processing on the mainframe to make use of COBOL's unique file structures and multiple files, it is usually possible to write a program that will combine (merge) the necessary COBOL files into one sequential text file for use on a microcomputer.

Archival Files

Another difficulty in analyzing district mainframe files at the school level on microcomputers is that the files may be stored as archival files. That is, the files could contain information on the students for every year or semester that they were enrolled. Thus records for a given student may appear many times within the same file. This creates no problem for the mainframe system since their COBOL program uses pointers that quickly locate the most

BEST COPY AVAILABLE

current record for any given student. However, in working with data on off-line microcomputer systems, there can be a lot of confusion about which entry is the correct one for any given student. Further, archival files are usually too large for microcomputers to handle. Therefore, it is necessary when creating files for use on microcomputers to download (transfer) only the most current or active record for each student.

Communication Issues

Many of the issues looked at so far are concerned with the use of files derived from mainframe computer systems. Nothing has been said about the process of moving the information from mainframe to microcomputer. Communications, in this context, refers to the communication between mainframe computer and microcomputer.

Computers can be hooked-up together in two ways: 1) direct connect and 2) dial-up. Direct connect means that the two computers are physically wired together. Dial-up systems make use of a telephone hook-up between computers. In order to make use of a dial-up arrangement each computer must be ecuiped with a modem (Modulator/Demodulator). Modems are rated in terms of how fast they transmit data. 300 BAUD modems transmit about 30 character per second while 1200 BAUD modems can transmit about 120 cps. 1200 Baud modems are the newer technology and consequently cost more.

BEST COPY AVAILABLE

At the microcomputer end 300 BAUD modems run between $100 and $250, with 1200 BAUD modems in the $400 to $600 range. On the mainframe side of the hook-up modems are much more expensive, in the thousands of dollars. Because of the cost of changing over, many district computing systems still operate at 300 BAUD.

On the face of it, communications between mainframe computers and microcomputers seems to be very straight forward. Both the mainframe and the microcomputer require a modem set to the same baud rate. However, very little involving the use of computers is strictly a hardware issue. In order to have effective communications, each system requires the appropriate communications software. In addition to transferring data from one system to another, the communications software may have to translate data so that it will be compatible for each system.

Typically this is done through the use of a communications package in the microcomputer. This communications package allows the micro to operate as a terminal to the mainframe, that is, the microcomputer behaves as if it were a remote terminal connected to the mainframe. It also allows the microcomputer to download files (transfer files from mainframe to microcomputer) and upload files (transfer files from the microcomputer to the mainframe). The mainframe also needs to have appropriate

BEST COPY AVAILABLE

software that allows for communication with microcomputer acting as remote terminals.

In university based systems communications between the mainframe and microcomputers can take place in one of two ways:

1) The microcomputer communicates directly with the mainframe's on-line interactive editor. Or
2) the microcomputer communicates through a file transfer program that directly transfers files from system to system.

Either of these systems is usually satisfactory. The choice usually comes down to whether the user is just going to transfer files or will be running programs and viewing the results on the microcomputer.

Universities tend spend a lot of time and money to make communications easy and efficient. School districts, typically, do not have the same resources to develop such sophisticated communications systems. The idea of hooking u. microcomputers to the district's main computer is relatively new so many districts have not as yet dealt with the many problems involved in communications.

Graphics

Graphic displays are one area in which microcomputers seem to have an advantage over the mainframe, especially data processing mainframes. There is a lot of very good

BEST COPY AVAILABLE

graphics software available for microcomputers. By and large, the microcomputer graphics software is less costly and easier to use than the maonframe variety. It is certainly possible to download files from the district mainframe to the school microcomputer and produce high quality graphs and charts.

There are some problems with graphic display of data that have to be anticipated. For one, there is the issue of the data format and/or file structure. While both these issues may have been dealt with at the microcomputer level, the graphics program may require yet another format or file structure. Very often graphics programs have special formats that preclude the use of general sequential text files. Some graphics programs want only the data for the graph being plotted and not all the other data associated with it. Thus, data for a graph of GPA versus hours worked would have to be extracted from the larger database file.

Another potential problem is concerned with the production of large numbers of graphs and charts, say one for every class. The problem here lies in the fact that most graphics software is designed to produce custom graphs or charts and is not designed for batch production of hundreds of the same graphs and charts are produced on slightly different sets of data.

BEST COPY AVAILABLE

One problem that can occur when users download parts of larger databases, for local use on microcomputers, is that multiple nonequivalent versions of the database can be formed. This comes about because local users update their local database with different information that does not find its way into the centralized database. In a short time, it is possible to get different answers to the same question depending upon which computer and which database is queried (Idstein & Athey, 1984).

Codebooks

Another area where one should exercise caution is in terms of the internal data codes that are used by district data processing programs. Sometimes information may be stored as actual values, at other times information is coded and abbreviated. Often only the system programmers have access to the codes and abbreviations that are used. This is because users of the mainframe system use only the programs written by the district and do not use the files themselves.

In research settings, codebooks are commonly produced and distributed to all workers on a project. Such codebooks aren't always easily available for district mainframe data files. A considerable amount of time may be spent working with the district data processing people, developing a codebook for the data files.

BEST COPY AVAILABLE

The Idstein & Athey (1984) and the Murray (1984) papers list a number of other problems that can occur in implementing educational information systems. For example: audit trails lost; the tendency to want to collect and store everything; more errors in data entry, due to more points in the system where errors can occur; redundant reports; incomplete and poorly organized reports; need for more training at all levels; more hardware problems, due to more hardware; need for on-line help facilities; need for a user support service.

Using microcomputers in the schools to assist in making educational decisions is a relatively new undertaking. There are still many problems to be identified and solved before their use becomes a common practice. Microcomputers and their software are becoming more powerful and sophisticated everyday, and what may be difficult now, will surely be easier in the future.

BEST COPY AVAILABLE

BIBLIOGRAPHY

Burstein, L. Information use in local improvement: A multilevel perspective. Paper presented at the American Education Research Association Annual Meeting, 1984.

Durant, D. & Cooley, W. Information systems for elementary school principals. Paper presented at the American Education Research Association Annual Meeting, 1984.

Dussault, N. F. Using computer managed instruction systems as part of an instructional informational system. Paper presented at the Joint Meeting of the Evaluation Research Society and the Evaluation Network, 1984.

Hathaway, W. E. Evolution, nature, uses and issues in the creation of local school district comprehensive information systems. Paper presented at the American Education Research Association Annual Meeting, 1984.

Idstein, P. & Athey, P. The state of practice in local educational information systems: Early warnings from the front line. Paper presented at the Joint Meeting of the Evaluation Research Society and the Evaluation Network, 1984.

Idstein, P. & Schmalz, E. Information for decision making: An idea whose time has come. Paper presented at the American Education Research Association Annual

BEST COPY AVAILABLE

Meeting. 1983.

Murray, M. Management of instructional information systems (MIIS) problems: Solved, unsolved and unanticipated. Paper presented at the Joint Meeting of the Evaluation Research Society and the Evaluation Network, 1984.

BEST COPY AVAILABLE

Table 1
Comparing Centralized *vs* Decentralized Computing

	Centralized Computing System	Decentralized Computing System
Type of computer(s):	One mainframe computer.	Many microcomputers.
Type of processing:	On-line processing	Off-line processing.
Processing done on:	Remote terminals.	Remote computers.
Size:	Large, room sized.	Small, desktop sized.
Computer malfunction:	All terminals down.	Only one computer down.
Processing speed:	High speed.	Slow speed.
Response lag:	Can be very slow.	Very fast.
Internal memory:	1M +	64K to 512K
External memory:	100M +	140K to 60M
Operators:	Highly trained.	Not much training.
Operating cost:	Very expensive.	Moderately expensive.

BEST COPY AVAILABLE

Appendix I

Valley Unified School District
Computer Center

Computer Mainframe: Burroughs B6800 purchased in 1978.

Main Memory: 1.2 million bytes.

Disk Memory: 1.2 billion bytes.

Other peripherials: 2 tape drives, 2 printers, a mark sense scanner, 120 terminals.

Twenty to 25% of the computer time devoted to district accounting needs. Approximately 75% of the computer time devoted to student administration needs.

One hundred thousand to 120,000 pages of reports per month. Thirty-five percent of the reports are special requests from the schools or the district office.

BEST COPY AVAILABLE

Appendix II

Valley Unified School District
Educational Data Processing Services

In 1969, the Valley Unified School District embarked upon a long-range plan to automate many of its information processing needs. This appendix contains a summary of the current status of their system.

PHILOSOPHY AND OBJECTIVES

1. To control growth of administrative and clerical costs.

2. To produce in a meaningful and timely manner all operating and comparative information needed for effeicient district operation.

3. To provide information for evaluating educational programs based on student achievement.

4. To provide a Vocational Program in Data Processing.

5. To make computer time available to both teachers and students.

6. To eliminate duplication of effort by maintaining one central file on all information which meets both internal and external needs of the district.

7. To eliminate known inefficiencies that arise from inadequate, slow, untimely, or unavilable information.

To provide data processing services to additional school districts.

BASIC SYSTEM FUNCTIONS

The following is a description of the files that are used in the basic system functions of the Educational Data Processing Services. These files and the description of thier use gives a good overall picture of how the system functions and how the various pieces fit together.

STUDENT MASTER FILE

The Student Master File is the key to the entire system. Almost every program within the system relies on the Student Master File for various forms of information. This file is updated on a daily basis from remote terminals. As a protective feature, updating can only be accomplished from a terminal in the student's own school.

BEST COPY AVAILABLE

STUDENT SCHEDULING

The scheduling package handles a variety of methods in scheduling students such as traditional, flexible, and modular scheduling. The schedule must be able to accomodate a four quarter system with up to 20 periods a day. The system is generalized to the point of allowing each school to have a totally different method of scheduling classes and activities.

PERMANENT RECORD

The permanent record contains both grades, credits, and test scores. The main source of input for this file is from the grade reporting system and the yearly test scoring procedure.

ATTENDANCE ACCOUNTING

The attendance accounting system services the average daily attendance requirements and it is also used as a counseling tool. Prior to installing remote terminals, it was not feasible to autimate period attendance, as is currently. done.

PROFICIENCY TESTING

The proficiency testing system is designed to measure how proficient a student is in a given discipline. To accomplish this task, the various disciplines of reading, language, and math are divided into subskills for testing.

STANDARDIZED & TEACHER MADE TEST SCORING

Test scoring information is gathered through the use of marked documents which are produced from both the student master file and student schedule files. The system reads in the mark sense documents, convert the responses to raw scores based on a key, and convert the raw scores to converted scores based on computation or table look up.

INDIVIDUAL EDUCATION PLAN (I.E.P.)

This system manages data for handicapped children's education program. Parents work with school personnel, jointly making decisions regarding the childs needs. The computerized I.E.P. is used as a management tool to insure that each handicapped child is provided special education and related services.

COMPUTER MANAGED INSTRUCTION (CMI)

BEST COPY AVAILABLE

This system keeps track of student progress/proficiencies in basic skill areas. Currently it is being utilized in Math, Reading, and Language.

INSTRUCTIONAL MEDIA

This system is based on a library cataloging application which is maintained by remote terminals. The files contain media titles, subjects, authors, annotations, and publishers. Media catalog, indexes, and shelf lists among othe things are also available from this system.

ADULT EDUCATION

The Adult Education System is used for maintaining a student's Master Record, Schedule of Classes, grades, credits, and Proficiency Test Scores. Data is entered into the system by optical scanned forms and/or terminals.

PERSONNEL RECORDS

Personnel accounting functions are totally integrated into a computerized filing system containing most of the operational data required by the district. This file contains such things as name, address, phone, emergency data, credentials, employment history, skills inventory, fringe benefits, etc.

BUDGET PREPARATION

The budgeting system is the basis for the entire appropriation ledger accounting system. The budget files contain information which reflects almost every conceivable major item being-budgeted for in the oncoming year.

APPROPRIATION ACCOUNTING

The appropriation accounting system is an up to date history of all emcumbrances, expenditures, transfers, abatements, and other sorts of transactions. This file is maintained through many sources such as the receiving department, accounts payable, purchasing department, etc.

ACCOUNTS PAYABLE

The system has the capability of receiving invoice data, comparing it ot the purchase order data, and kicking out the transaction if all things are not equal. If invoices match, previous prices and receivables, the system will make an entry into the appropriate ledger file.

PURCHASE ORDER GENERATION

BEST COPY AVAILABLE

The system produces purchase orders using a standardized catalog which reflects almost every item that the district purchases during the year.

FURNITURE, EQUIPMENT, & SUPPLY CATALOGS

The primary function of this file is to supply information for generating purchase orders, keeping track of amounts in order, year to date amounts received, printing out various catalogs, and keeping track of warehouse inventory reorder quantities, etc.

INVENTORY CONTROL

Through the use of an automated system, operational supplies are maintained on a constant basis in the district warehouse. Terminals placed in every department and school initiate the automatic handling of warehouse supply requisitions.

PROPERTY MANAGEMENT

The system is used to maintain an ongoing inventory file of all equipment items which are valued over twenty-five dollars. This file contains item description, acquistion date, acquisition price, serial number, purchase order number, amount purchased, and physical location within the district.

PROPERTY MAINTENANCE

Through the use of an automated system, work orders are received by Maintenance and Facilities. As work is warrented, requests are given to the designated personnel in each School/Department and a work order is initiated via the terminals.

CRIME REPORTING

The Crime Reporting System maintains a detailed record of Crime/Vandalism within the district and a summary of cost breakdowns and types of crimes.

BEST COPY AVAILABLE

Appendix III

Valley Unified School District
Standard Reports

The following is a list of the standard reports which are generated by the Educational Data Processing Services. The report titles are classified by the basic system function they serve.

STUDENT MASTER FILE
Teacher Information Sheet
District Student Address Directory
District Master Address Report
Student Living Attendance
Locker Assignement Log
Self Scheduling Course Request

STUDENT SCHEDULING
Students Listed by Course Priorities
Course Master List
Course DEpartment List
Master Schedule Exception Report
Master Schedule Proof List
Course Request Listing
Potential Conflict Matrix
Section Enter/Drop List
Activity Calendar
Student Graduation Status
Grade Reporting Exceptions
Drop, Fail and Unsatisfactory List
Principals Recognition List
Grade Proof Report
Grade Proof List
Grade Distribution By Subject
Grade Distribution By Teacher
Progress Report Exception List
Teacher Progress Report Proof List
Sports Ineligibility Report

PERMANENT RECORD
Perminant Grade Record

ATTENDANCE ACCOUNTING
Students Living In Attendance Boundry
Valid Locator Count
Uncleared Absent Report
Weekly Attendance Report
Unexcused Absence Report
Bimonthly Frequent Absence Report
Attendance Exception Report
Attendance Detail Report

BEST COPY AVAILABLE

Principals Attendance Report
Monthly Attendance Report
Attendance Record For AIT
Enrollment By Grade And Sex
Enrollment Summary
Summary By Special Classes
Monthly Enrollment Report
Weighted Class Size Report
Trend For Weighted Classes

PROFICIENCY TESTING
Rasch Testing Values
Proficiency Testing Detail Report
Test SCore Distribution
Proficiency Testing Results
Proficiency Testing Status
Proficiency Response Report By Test

STANDARDIZED & TEACHER MADE TEST SCORING
Physical Performance Test
Teacher Instructional Strategy
Student Detail Report For Group Testing
Class Summary Report For Group Testing
School Summary Report For Group Testing
District Summary Report For Group Testing
Simple Response Tally
Title I List By Teacher
Title I List By Grade
Individua' Studet Quartile Ranking
School Quartile Summary By Grade
Students Below 37th Percentile in Reading and/or Math
Scores And Wrong Response Record
Frequency Analysis
Frequency Distribution With Percentiles
Standford Early School Achievement Test

INDIVIDUAL EDUCATION PLAN (I.E.P.)
I.E.P. For The School Year
Ongoing Individual Education Plan
Drivers Ed List
Special Education Classification List
Special Education Pupil Count
Unduplicated Age Classification Count
Ethnic, Sex, LES-NES Classification Matrix
Special Services Tally
Student Flow
New Student Classification Ethnic Code Matrix
Regular Program Participation Tally
Adaptive PE List

COMPUTER MANAGED INSTRUCTION (CMI)
Individual Student Profile Of Incompleted Tasks
Tasks Yet to Be Completed
Continuum Status Report

BEST COPY AVAILABLE

INSTRUCTIONAL MEDIA
Media Center Audio-Visual Department List
Library Maintenance
Library Media Additions
Media Inventory By Dewey Prefix

ADULT EDUCATION
Teacher Sequence

PERSONNEL RECORDS
Follow Up List For Rehire Letters
Certificated Employees
Position Codes
Location Codes
Subject Codes
Classification Salary Schedule
Classification Management Salary Schedule
Personnel Position/Location Report
Employee Master Record
School District Bargaining List
Personnel Information
Quarterly Personnel Payment Record
Payroll Listing
Processing Transactions
Employee Retro Report
Payroll Balance Listing
Credential Report
Insurance Carriers
Employee Insurance Categories
Employee Credential And Education Record
Insurance Analysis Report
Monthly Insurance Report
Employee Insurance Record
Employee Probation Report
Applications Status Report
Classification Salaries
Quarterly Personnel Payment Record
Certificated Payroll Information
Notification Of Salary Placement

BUDGET PREPARATION
Buget Request Form
Balance Buget Input
Buget Balance Totals
Requested Buget
Responsibility Detail
Object Detail
Object Summary
Preliminary Buget
Tentative Buget
Program Detail
Program Summary
Program Detail By Object
Published Buget

BEST COPY AVAILABLE

State Program Summary
Final Buget
Current Cost of Education Per Average Daily Attendance
Responsibility Summary
State Program Detail

APPROPRIATION ACCOUNTING
Regular Board Meeting Agenda
Accounts Appropriation Ledger
Cost Distribution
Appropriation Expenditure Transfer Report
Appropriation Ledger
Level Summary
Payroll Expenditure Error Report
Disencumber Total
Ledger Update Error Report

ACCOUNTS PAYABLE
Appropriation Ledger Direct Entry Proof Totals
Invalid Invoices
Current Year Expended
Invoicer Report

PURCHASE ORDER GENERATION
Purchase Order
Balance Outside Purchases
Invalid Requisition Report
Purchase Order Follow-Up Report
Invoice Not Received Report
Inventory Status Report
Receving Report

FURNITURE, EQUIPMENT, & SUPPLY CATALOGS
General Purpose Catalog
Warehouse Picking Report
Subscription Catalog
Authorize Bid Acceptance
Vendor Organization Plan
Bid Form

INVENTORY CONTROL
Monthly Statement of Warehouse Charges
Warehouse Requistion Activity
Warehouse Transaction Report
Back-ordered Warehouse Requisition
Back-ordered Items
Inventory Status Report
Warehouse Inventory Verification

PROPERTY MANAGEMENT
Fixed Data By Noun
Fixed Data By Stock Sequence
Noun Listing
Verb Listing

BEST COPY AVAILABLE

Manufacture Listing
Serial Master Maintenance
District Serial Master File
Furniture and Equipment Inventory
Furniture and Equipment Inventory Maintenance.

PROPERTY MAINTENANCE
Workorder Status Report

CRIME REPORTING
Crime Report
Crime And/Or Damage Reporting

BEST COPY AVAILABLE

Appendix IV

Valley Unified School District
Sample of Non-standard Report Requests

Many reports and printouts generated by the district computing center are derived from user requests. These requests may be submitted in writting or they may be direct requests for reports from remote terminals. These non-standard reports and printouts may be generated only once or at most a few times. If there is sufficient need for a non-standard report, it can then be incorporated into the Basic System Functions. The following is a sample of some of the non-standard reports that have been requested by the schools and district office.

ACCOUNTING AND BUSINESS FUNCTIONS
LIST OF ACCOUNTS BY PROGRAM & DISTRIBUTION
LIST OF DATA COM PROGRAM WITH DA/TIME CODE=2
ALL DATA FILES USED IN REPORT GENERATOR
GENERAL FUND 4000 ACCOUNT SUMMARY
PROGRAM LIST OF ALL BUSINESS PROGRAMS
ACCOUNTS WITH NO ACTIVITY FOR 3 YEARS
OPEN PURCHASE ORDERS
DATA COM TRANSCODE WITH THEIR PROGRAMS
REPORT WORDS USED FOR GENERATING REPORTS
LIST OF ACCOUNTS BY PROGRAM AND DISTRIBUTION
GRID ANALYSIS USED OTHER RINFOR SPECS TO CREATE DATA

PERSONNEL REPORTING FUNCTIONS
LIST OF ALL ACTIVE APPLICANTS
LIST OF EMPLOYEES WITH TOTAL MONTHS OF SERVICE SORTED

STUDENT REPORTING FUNCTIONS
LIST OF STUDENTS IN CAREER MAGNET SCHOOLS
IMMUNIZATION REPORT FOR LAST YEARS STUDENTS
MILITARY LIST BY SCHOOL AND GRADE
ROOM LIST WITH PARENTS NAME AND PHONE
LIST OF ALL STUDENTS IN WORK EXPERIENCE CLASSES
STUDENT ABSENCES WITH LUNCH PASS
TO THE FAMILY AT:
ACTIVITIES OFFICE ATHLETIC FEE LIST
11TH GRADE STUDENTS
YEARBOOK LIST
STUDENT POPULATION BY SCHOOL
HISPANIC STUDENTS WITH GPA>3.0
LIST OF FALL REFERRALS COMPARED TO SPRING REFERRALS
TO THE PARENT'S OF
CAREER MAGNET SCHOOL ZERO LIST
LIST OF STUDENTS IN A.P. CLASSES
9TH GRADE STUDENTS NOT ENROLLED IN MAGNET SCHOOLS
ESL BILINGUAL STUDENTS

BEST COPY AVAILABLE

LAST KNOWN ADDRESSES OF CLASS OF 77
LIST OF FIRST REFERRAL DATA FOR APPLICANTS
LIST OF ALL STUDENTS WITH RIGHTS OF 18 YEAR OLD
SPECIAL ED STUDENTS
LIST OF ALL BOYS WITH GRADE/COUNT
LIST OF ALL GIRLS WITH GRADE/COUNT
LIST OF ALL STUDENTS WITH CREDITS EARNED 50 OR LESS
LIST OF ALL STUDENTS INTEACHER AID CLASS
CMS NON-ENROLLEES
LIST OF FIRST REFERRALS ON YES SYSTEM
PERCENTILE > 95 FOR 8TH AND 9TH GRADERS
18 YEAR OLD STUDENTS WITH ATTENDANCE PROBLEMS
ALPHA HOME ROOM LIST
HISPANIC STUDENTS WITH GPA>1.9 WITH ATTENDANCE PROBLEMS
ATHLETIC PARTICIPATION AND ATTENDANCE
TOTAL READING PERCENTILES
STUDENT BIRTHDATES
SPECIAL TEST
MASTER LIST OF STUDENTS IN CMS
10/11 GRADERS WITH GPA>3.0 FOR CONVENTION
10/12 GRADERS WITH GPA>3.6 FOR DODGER TICKETS
STUDENTS THAT ARE ON FREE LUNCH
LIST OF ALL STUDENT CREDITS EARNED OF 190 OR LESS
ALPHA LIST BY TEACHER
GPA LIST BY SCHOOL AND GRADE
3RD PERIOD LIST WITH STUDENTS AND BIRTHDATE
LABELS BY GRADE OF HONOR ROLL STUDENTS>2.99
MASTER LIST OF STUDENTS WITH GPA>3.2 AND PERCENTILE
CTBS BATTERY FILE
LIST OF ALL APPLICANTS IN YOUTH EMPLOYMENT SYSTEM
12TH GRADERS WITH GPA>2.99
ALPHA LIST WITH NAME GRADE AND PHONE NUMBER
LIST OF STUDENTS SORTED BY TOTAL CREDITS EARNED
LIST OF STUDENTS PERCENTILE WITH LESS THAN 51%
SUSPENSION REPORTASB CARDS AND YEARBOOK PURCHASERS
ASB/YEARBOOK PURCHASES BY GRADE & GPA

<u>MISC</u>
LIST OF CHAPTER I CHANGES

BEST COPY AVAILABLE

Appendix V

Site A High School
Computerized Acountability for Student Achievement

The original design of the Computerized Accountability for Student Achievement (CASA) Project proposed to correct the problems that counseling staffs at the secondary school level have with managing information effectively. The necessity of increased efficiency in managing information was the driving force behind CASA.

Project Assumptions

1. The Counseling and Guidance Service is one of the most valuable resources available to the students.

2. The counseling program has not been a program for change or adjustment to student needs. Little accountability has been required from counseling programs in the past.

3. Counselors, administrators, and teachers are not privy to accurate, up-to-date, specific set of information indicators which could lead to changes in the understanding of student needs and to concrete changes in student curricular priorities.

4. The frustration of parents is often elicited by conflicting and inadequate reports of student progress. Students also feel a similar frustration when placed in a position of inadequacy and dependence on a potentially mis-informed authority which lacks accurate information.

Project Objectives

1. Provide for the accountability of counseling and guidance services.

2. Provide varieties of relationships between student variables and trends associated with programs.

3. Provide information for staff development, curricular design and program development.

4. Capability of analysis of relationships and trends concerning critical student problem areas such as truancy, dropouts, substance abuse, etc.

5. Produce students' manes through an analysis of high risk profiles in order that intervention programs can be designed and implemented.

BEST COPY AVAILABLE

6. Provide on-line retrieval of information regarding class numbers, individual and group competency, and levels of performance.

7. Provide continuous objective information for educational and career decision-making based on past performance, current status and future goals.

BEST COPY AVAILABLE